

**Response Under 37 CFR §1.116**  
**Expedited Procedure**  
**Examining Group 1700**  
Application No. 09/870,037  
Paper Dated: June 20, 2003  
In Reply to USPTO Correspondence of March 20, 2003  
Attorney Docket No. 2204-010851

**REMARKS**

Claims 1-20 are pending in this application. While the final Office Action, dated March 20, 2003, indicates that claims 1-19 are pending, Applicants respectfully disagree. The application as originally filed included claims 1-20, which were pending in the first Office Action dated October 4, 2002. No claims were cancelled in the Amendment filed January 6, 2003 and, therefore, claims 1-20 currently remain in the application.

As discussed with Examiner Ahmed in the telephone interview of June 12, 2003, independent claims 1 and 8 have been amended to further clarify over the cited references. Claims 6, 13 and 19 have been amended to clarify typographical informalities. Support for all amendments to the claims can be found in the specification as originally filed. No new matter has been added.

Examiner Ahmed is thanked for the courtesy extended to Applicants and Applicants' representative, Ms. Patel, in the telephone interview conducted on June 12, 2003. Pursuant to the interview in furtherance of the arguments hereinafter, Applicants have amended independent claims 1 and 8 to further clarify over the cited references.

**35 U.S.C. §112 Rejections:**

Claims 3 and 16 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for the percent recited. The Examiner states that support in the original disclosure for the addition of the phrase "weight %" to claims 3 and 16 was not apparent, citing page 4, lines 14-15, as simply stating that the "Ca ion is bonded to silica particles as a corrosion inhibitor A at a ratio of 3-40% in general". Applicants respectfully disagree. Specifically, support can be found for "weight %" in the specification at page 3, lines 2-8. In

**Response Under 37 CFR §1.116**  
**Expedited Procedure**  
**Examining Group 1700**  
Application No. 09/870,037  
Paper Dated: June 20, 2003  
In Reply to USPTO Correspondence of March 20, 2003  
Attorney Docket No. 2204-010851

particular, the application states “a ratio of 2-50 parts by weight based on 100 parts by weight of resinous components of the paint”. Furthermore, “polyphosphate...is added to the resin paint at an A/B weight ratio of 60/40 to 5/95 A + B ratio of 5-150 parts by weight based on 100 parts by weight of resinous components of the paint.” Thus, the specification clearly discusses the corrosion inhibitor in parts by weight based on 100 parts by weight as well as in weight ratio. Additionally, Applicants believe one skilled in the art would understand a weight ratio or a ratio of 2-50 parts by weight based on 100 parts by weight to represent a composition in terms of “weight %”. Reconsideration of these rejections is respectfully requested.

35 U.S.C. §103(a) Rejections:

I. *Claims 1-2, 4-15, and 17-20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,015,628 to Urata et al. (hereinafter “the Urata patent”) in view of U.S. Patent No. 5,736,255 to Sasaki et al. (hereinafter “the Sasaki patent”).*

Amended independent claim 1 discloses a paint composition for the formation of a corrosion and moisture-resistant paint layer on a surface of a metal sheet. The composition includes a base resin and dispersed therein particles of a chromium-free corrosion inhibitor prepared from porous silica particles to which Ca ion bonded by ion-exchange, a polyphosphate, and optionally other pigment(s). Amended independent claim 8 discloses a painted metal sheet having a paint layer. The paint layer includes a base resin and dispersed therein particles of a chromium-free corrosion inhibitor prepared from porous silica

particles to which Ca ion is bonded by ion-exchange, a polyphosphate, and optionally other pigment(s) formed on a surface of a base metal sheet.

The Urata patent discloses an organic composite coated steel sheet. A zinc plated steel sheet has on its surface a first chromate layer and a second layer of an organic film comprising an epoxy resin mixture of a lubricant and a rust preventive additive. The amount of the rust preventive additive to be added to the organic film is from 3-50% by weight and can include fine powders and colloids of silica, sparingly soluble chromates, aluminum dihydrogen triphosphate, aluminum phosphomolybdate, etc.

The Sasaki patent discloses a sealing material having good resistance to attack by molten metal. The material includes a composition of 15-50 weight % colloidal silicon dioxide and 50-85 weight % aluminum metaphosphate.

Applicants have amended independent claims 1 and 8 to further distinguish over the prior art. In particular, Applicants have amended independent claims 1 and 8 to further clarify that the corrosion inhibitor of the present invention is chromium-free and accordingly achieves corrosion and moisture resistance without the use of chromium. On the other hand, the Urata patent discloses the use of a chromate layer intermediate a metal sheet and an organic resin to achieve corrosion resistance and not a paint layer on a metal sheet as in amended independent claims 1 and 8. Furthermore, in addition to the chromate layer, the Urata patent discloses a combination of silica and a sparingly soluble chromate in the organic resin layer. The Urata patent does not teach or suggest the combination of silica particles to which Ca ion is bonded by ion-exchange, a polyphosphate, and optionally other pigments to achieve corrosion and moisture resistance.

The Examiner contends that the Urata patent discloses silica ion exchanged with calcium as a preferred corrosion-inhibiting agent in the base resin of the paint composition as recited in claims 1 and 8. Applicants respectfully disagree. The Urata patent does not teach or suggest silica ion exchanged with calcium as a preferred corrosion-inhibiting agent. As discussed above, the Urata patent discloses silica combined with sparingly soluble chromate as the preferred rust preventive additive for achieving corrosion resistance (column 5, lines 58-62 and further emphasized in column 10, lines 53-55). Therefore, the Urata patent does not teach or suggest silica ion exchanged with calcium as a preferred corrosion-inhibiting agent. Applicants respectfully disagree with the Examiner's assertion that the base resin of the Urata patent does, in fact, contain the rust preventive additive as recited in the present invention.

The Urata patent does not teach or suggest the combination of silica ion exchanged with calcium. Column 21, lines 34-36, of the Urata patent refers to colloids of silica as an example of a rust preventive additive. As discussed in the specification of the present invention, colloidal silica does not produce the desired corrosion resistance properties as does the calcium bonded silica particles in amended independent claim 1 and 8. Furthermore, the Urata patent does not teach or suggest the combination of silica particles to which calcium ion is bonded by ion-exchanged and a polyphosphate to achieve corrosion resistance and moisture resistance in the paint layer. While the Urata patent does disclose having a rust preventive additive in the organic film, it also discloses a chromate layer intermediate a metal sheet and the organic film. Therefore, it is the chromate layer that

**Response Under 37 CFR §1.116**  
**Expedited Procedure**  
**Examining Group 1700**  
Application No. 09/870,037  
Paper Dated: June 20, 2003  
In Reply to USPTO Correspondence of March 20, 2003  
Attorney Docket No. 2204-010851

functions as the primary source of corrosion resistance and not the organic film as the Examiner asserts.

Additionally, the Urata patent teaches away from the use of aluminum dihydrogen triphosphate as well as ion-exchanged silica as corrosion inhibitors. Column 21, lines 38-40 of the Urata patent as discussed above discloses the most preferred rust preventive additive as silica and sparingly soluble chromates because of their corrosion preventive properties. Therefore, the Urata patent teaches the use of chromium as a preferred method to obtain corrosion resistance. As discussed above, the paint composition in amended independent claims 1 and 8 include a chromium-free corrosion inhibitor and thus achieve corrosion resistance, and moisture resistance without the use of chromium. The Urata patent fails to teach or suggest a chromium-free corrosion inhibitor having the combination of calcium-bonded silica particles and polyphosphates in a base resin of a paint composition to achieve corrosion and moisture resistance as claimed in amended independent claims 1 or 8.

Sasakai does not overcome the shortcomings of Urata. Additionally, the combination of the Urata and Saskai patents teach away from the use of Ca-bonded silica particles. The Sasaki patent teaches the combination of colloidal silicon dioxide with aluminum polyphosphate and not that of Ca-bonded silica particles and polyphosphate in amended independent claims 1 and 8 of the present invention. The paint composition of the present claimed invention obtains corrosion resistance with the combination of Ca-bonded silica particles with polyphosphate which cannot be achieved by the use of other silica, in particular, colloidal, fumed or wet silica, as evidenced in the comparative examples

**Response Under 37 CFR §1.116**  
**Expedited Procedure**  
**Examining Group 1700**  
Application No. 09/870,037  
Paper Dated: June 20, 2003  
In Reply to USPTO Correspondence of March 20, 2003  
Attorney Docket No. 2204-010851

illustrated in the specification. Therefore, the combination of the Urata and Sasaki patents fail to teach or suggest a paint composition as claimed in amended independent claims 1 and 8.

Claims 2, 4-7 depend from amended independent claim 1 and add further limitations to amended independent claim 1, and are deemed to be patentable for the reasons discussed hereinabove in connection with amended independent claim 1. Claims 9-10, 15, and 17-20 depend from amended independent claim 8 and add further limitations to amended independent claim 8, and are deemed to be patentable for the reasons discussed hereinabove in connection with amended independent claim 8. Reconsideration of the rejections of claims 1, 2, 4-10, 15, 17-20 is respectfully requested.

*II. Claims 11-13 stand rejected under 35 U.S.C. §103(a) for obviousness over the Urata patent in view of the Sasaki patent and U.S. Patent No. 6,180,177 to Nagashima et al. (hereinafter "the Nagashima patent").*

The Urata and Sasaki patents were discussed hereinabove in detail. The Nagashima patent discloses a surface-treatment agent. The composition includes a cationic component, at least one acid component, a silane coupling-agent component, and one or more water-soluble polymer components. The acid component is selected from the group consisting of (1) fluoro-acid which contains four or more fluorine atoms and one or more elements selected from the group consisting of titanium, zirconium, silicon, hafnium, aluminum and boron; and (2) acetic acid.

The Nagashima patent, however, does not overcome the deficiencies of the Urata patent and the Sasaki patent combination, as discussed hereinabove. The Nagashima

Response Under 37 CFR §1.116  
Expedited Procedure  
Examining Group 1700  
Application No. 09/870,037  
Paper Dated: June 20, 2003  
In Reply to USPTO Correspondence of March 20, 2003  
Attorney Docket No. 2204-010851

patent fails to teach or suggest a paint composition including a base resin with particles dispersed therein of Ca-bonded silica particles, as well as the combination of Ca-bonded silica particles and polyphosphate to achieve corrosion and moisture resistance. Therefore, since claims 12-13 depend from claim 11, and claim 11 depends from amended independent claim 8, they are allowable for the same reasons as amended independent claim 8.

*III. Claim 14 stands rejected under 35 U.S.C. §103(a) for obviousness over the Urata patent in view of the Sasaki patent and U.S. Patent No. 5,623,003 to Tanaka (hereinafter "the Tanaka patent").*

The Urata and Sasaki patents were discussed hereinabove in detail. The Tanaka patent discloses a coating composition having corrosion resistance. The coating composition includes a resin composition of a polyester resin and an epoxy-modified polyester resin, a novolac-based epoxy-resin, a curing agent, and an anti-corrosion pigment, such as aluminum dihydrogen tripolyphosphate.

The Tanaka patent, however, does not overcome the deficiencies of the Urata and Sasaki patent combination, as discussed hereinabove. The Tanaka patent fails to teach or suggest a paint composition including a base resin with particles dispersed therein of Ca-bonded silica particles. Moreover, the Tanaka patent fails to teach or suggest the combination of Ca-bonded silica particles and polyphosphate to achieve corrosion and moisture resistance. Therefore, since claim 14 depends from amended independent claim 8, it is allowable for the same reasons as amended independent claim 8. Furthermore, even if the cited combination fairly taught the Applicants' claimed invention, the rejection is improper because there is no basis for combining the patents.

Response Under 37 CFR §1.116  
Expedited Procedure  
Examining Group 1700  
Application No. 09/870,037  
Paper Dated: June 20, 2003  
In Reply to USPTO Correspondence of March 20, 2003  
Attorney Docket No. 2204-010851

**CONCLUSION**

For all of the foregoing reasons, Applicants believe that claims 1-20, as amended, are in condition for allowance. Reconsideration of the rejections and allowance of claims 1-20 are respectfully requested.

Respectfully submitted,

WEBB ZIESENHEIM LOGSDON  
ORKIN & HANSON, P.C.

By

  
Alka A. Patel

Registration No. 49,092

Attorney for Applicants

700 Koppers Building

436 Seventh Avenue

Pittsburgh, Pennsylvania 15219-1818

Telephone: 412-471-8815

Facsimile: 412-471-4094